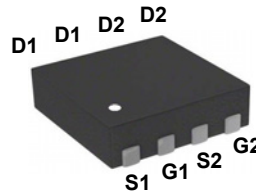
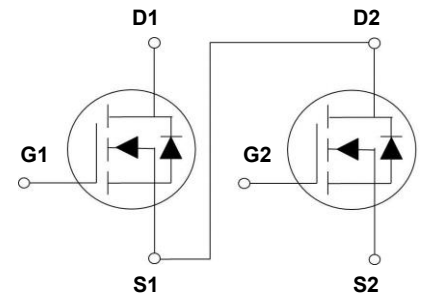


Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	13m Ω
I_D	35A



DFN3.3X3.3-8L



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

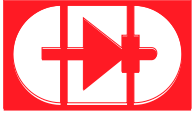


Description

The GSFN0336 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	35	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		24.8	A
Drain Current-Pulsed	I_{DM}	140	A
Maximum Power Dissipation	P_D	30	W
Derating Factor		0.24	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ⁵	E_{AS}	72	mJ
Thermal Resistance, Junction-to-Case ²	$R_{\theta JC}$	4.17	$^\circ\text{C}/\text{W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$


Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.9	1.3	2.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	11	13	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	14.5	19	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=20A$	26	-	-	S
Dynamic and Switching Characteristics⁴						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, F=1MHz$	-	1000	-	pF
Output Capacitance	C_{oss}		-	180.8	-	
Reverse Transfer Capacitance	C_{rss}		-	164.4	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=15V, R_L=0.75\Omega, V_{GS}=10V, R_G=3\Omega$	-	5	-	nS
Turn-On Rise Time	t_r		-	12	-	
Turn-Off Delay Time	$t_{d(off)}$		-	19	-	
Turn-Off Fall Time	t_f		-	6	-	
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=20A, V_{GS}=10V$	-	17	-	nC
Gate-Source Charge	Q_{gs}		-	2.8	-	
Gate-Drain Charge	Q_{gd}		-	3.9	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=20A$	-	-	1.2	V
Diode Forward Current ²	I_S		-	-	35	A
Reverse Recovery Time	t_{rr}	$I_F=20A, di/dt=100A/\mu s, T_J=25^\circ C$	-	19	-	nS
Reverse Recovery Charge	Q_{rr}		-	10	-	nC
Forward Turn-On Time	t_{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design.
5. EAS condition : $T_J=25^\circ C, V_{DD}=15V, V_G=10V, L=0.5mH, R_g=25\Omega$

Typical Electrical and Thermal Characteristic Curves

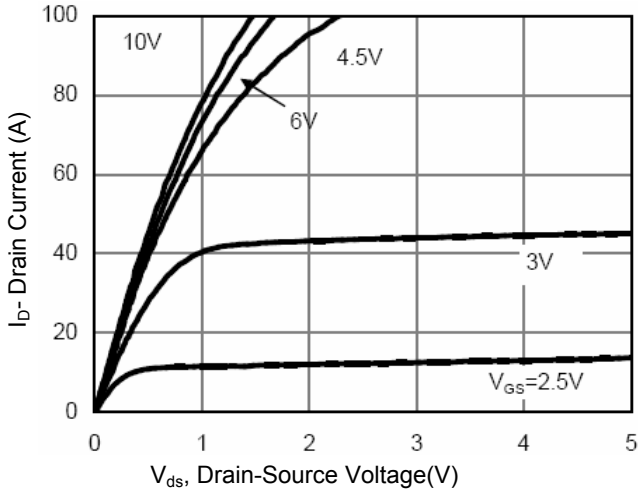


Figure 1. Output Characteristics

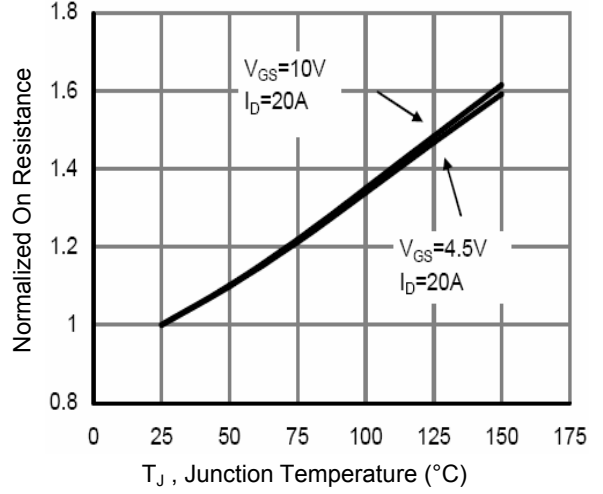


Figure 2. R_{DSON} -Junction Temperature

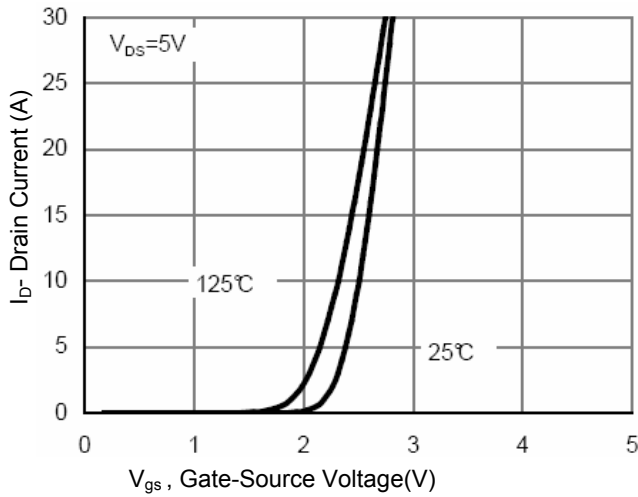


Figure 3. Transfer Characteristics

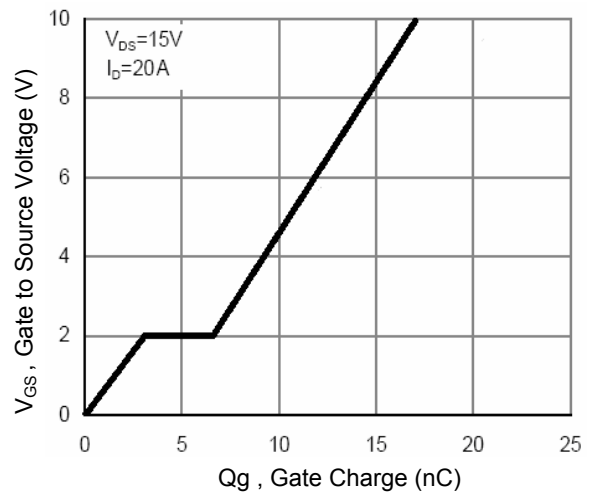


Figure 4. Gate Charge

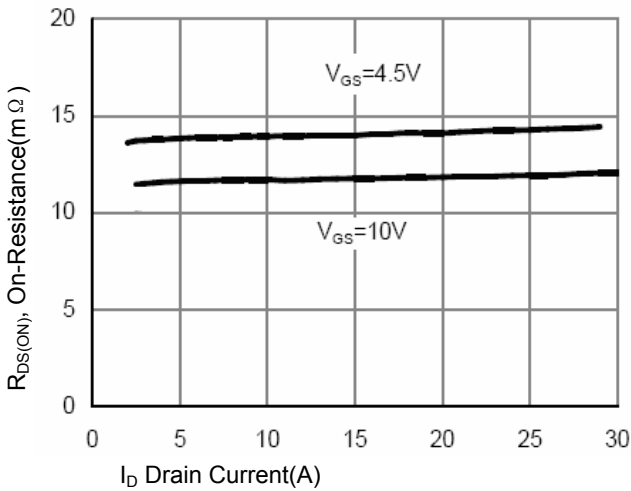


Figure 5. $R_{DS(ON)}$ -Drain Current

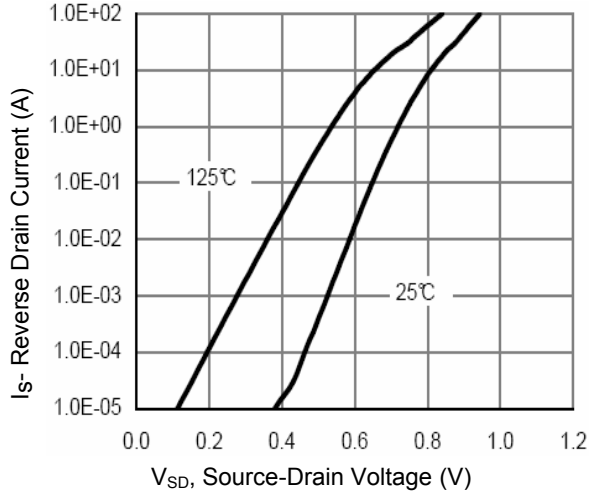


Figure 6. Source-Drain Diode Forward

Typical Electrical and Thermal Characteristic Curves

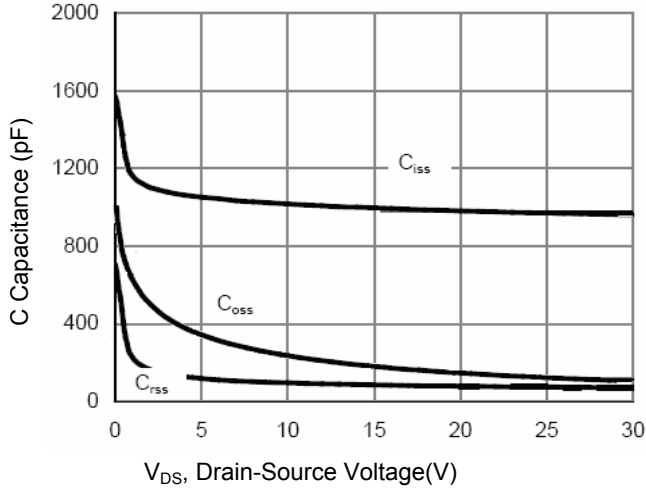


Figure 7. Capacitance vs. V_{DS}

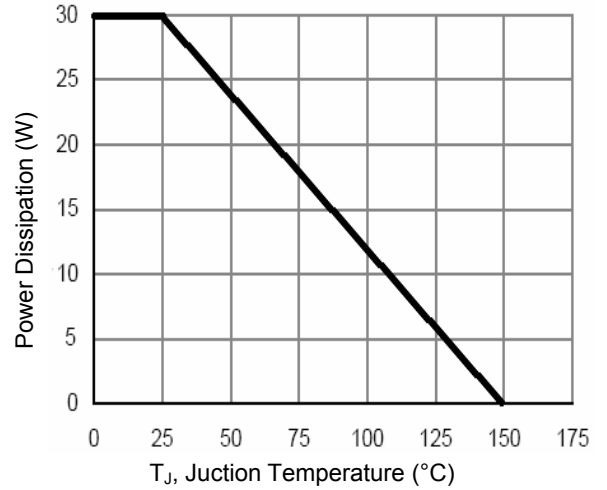


Figure 8. Power De-rating

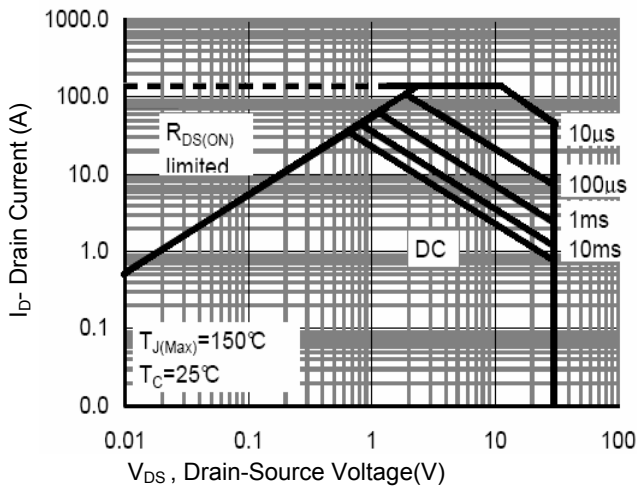


Figure 9. Safe Operation Area

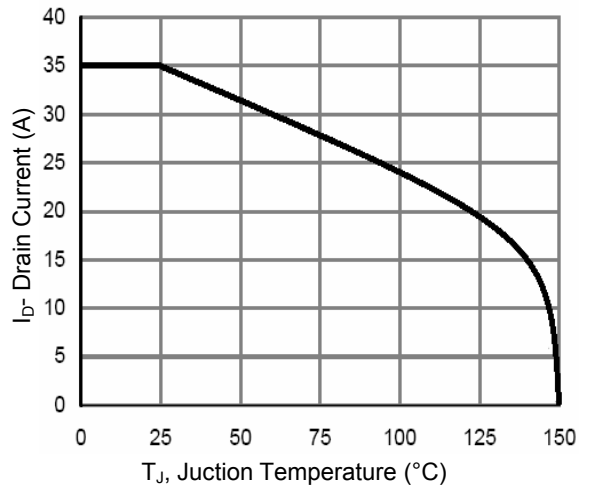


Figure 10. Current De-rating

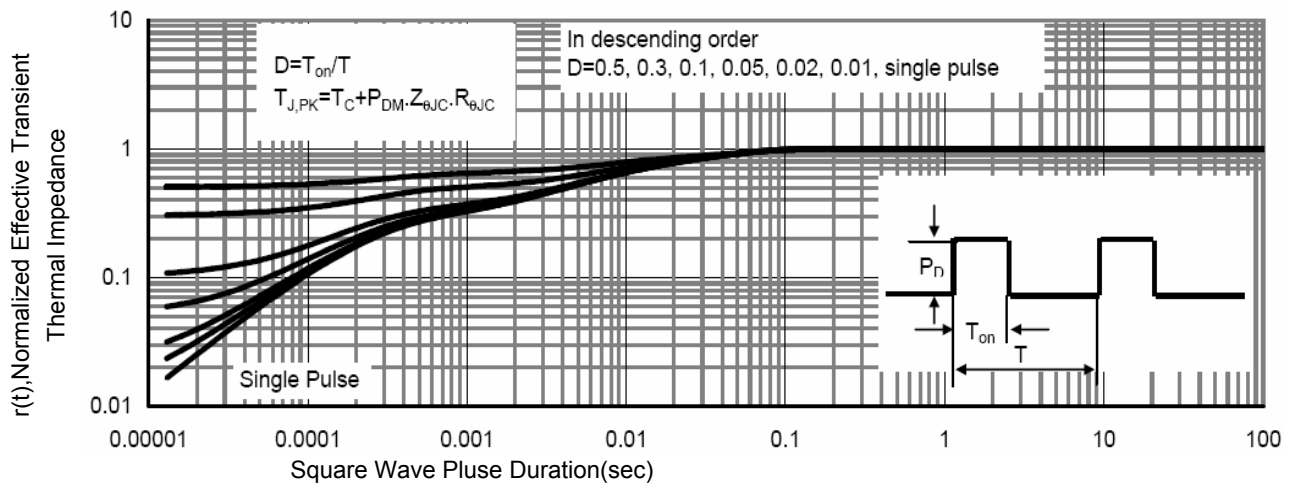


Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuits & Waveforms

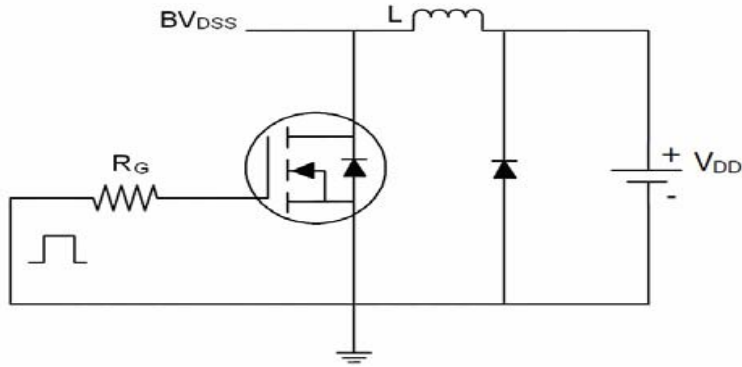


Figure 12. E_{AS} Test Circuits

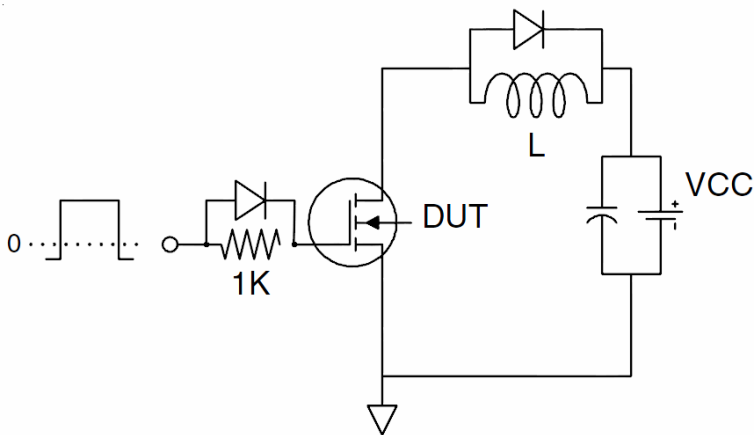


Figure 13. Gate Charge Test Circuit

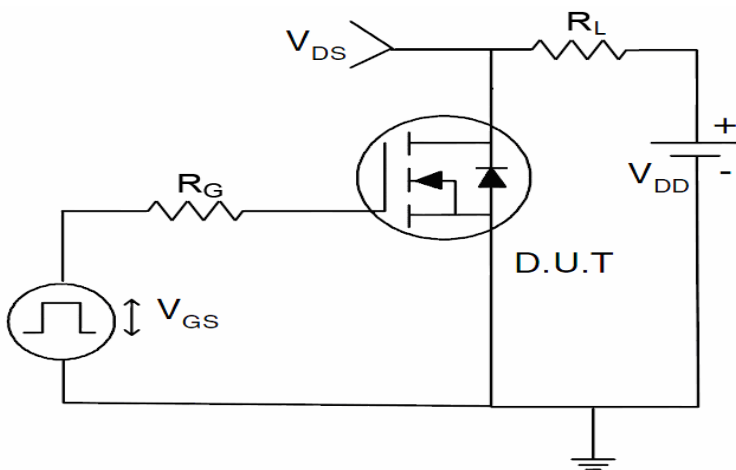
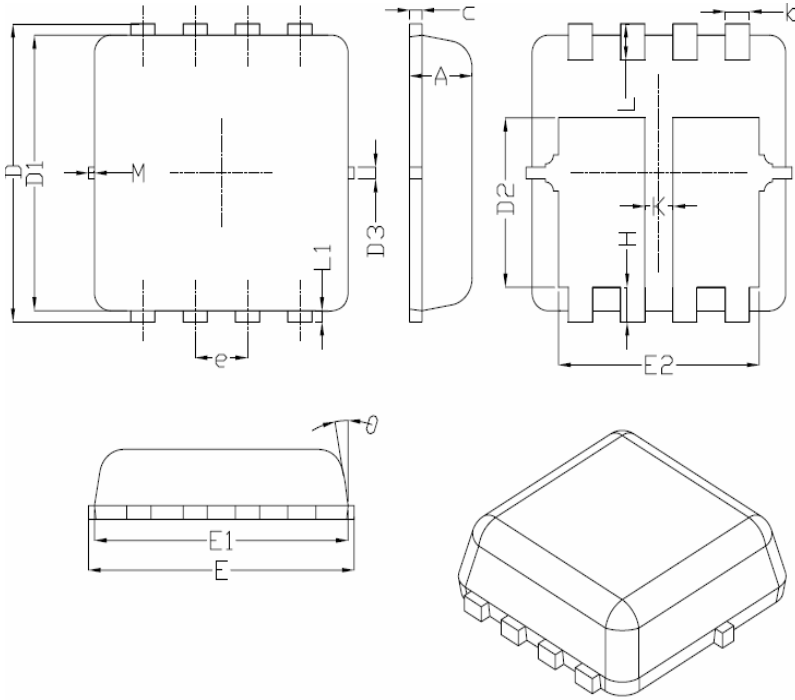


Figure 14. Switch Time Test Circuit

Package Outline Dimensions (DFN3.3X3.3-8L)



Symbol	Dimensions in MM		
	Min	Nom	Max
A	0.7	0.75	0.8
b	0.25	0.3	0.35
c	0.1	0.15	0.25
D	3.25	3.35	3.45
D1	3	3.1	3.2
D2	1.78	1.88	1.98
D3	-	0.13	-
E	3.2	3.3	3.4
E1	3	3.15	3.2
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.3	0.39	0.5
L	0.3	0.4	0.5
L1	-	0.13	-
K	0.3	-	-
θ	-	10°	12°
M	*	*	0.15

Recommended Pad Layout

